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# CLAIMS

1. A computer-implemented method for generating an arbitrary n-dimensional matrix presentation of at least part of an m-dimensional database consisting of real data records having at least one key dimension and at least one corresponding data value field,

said method comprising the steps of:

Calculating a sorting sequence of the entries of said data value fields in accordance with said n-dimensional matrix presentation;

for each dimension of said n-dimensional matrix presentation, calculating corresponding entry point information into said sorting sequence;

calculating the cardinality of said n-dimensional matrix presentation, based on said calculated sorting sequence and said calculated entry point information;

generating said arbitrary n-dimensional matrix presentation based on said cardinality wherein said data value fields are processed based on said sorting sequence and said entry point information.

2. Method according to claim 1, wherein transforming the key dimensions of all data records to index values, said index values referencing attributes of corresponding key items of said key dimensions and wherein re-transforming the sorted index values back to said real data for generating said arbitrary matrix presentation.

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3. Method according to claim 2, wherein said index values of one key dimension are represented by a vector.

4. Method according to claim 2 or 3, wherein said index values are represented by integer numbers.

5. Method according to any of the preceding claims, comprising the particular steps of

generating, for each dimension of said database, a reference table consisting exclusively of said integer values wherein said reference table includes record identifiers for each data record whereby keeping the dimension structure of said database;

generating, based on said reference table, a sequence vector by means of scalar vector operations, based on the dimension structure of said arbitrary matrix presentation;

generating, based on said reference table, a count vector providing the amount of data records included in one of said at least one dimension of data records, thus defining transitions between different of said at least one dimension of data;

presenting said arbitrary matrix presentation of said database wherein grouping said at least one dimension of data records using the real data contained in said sequence vector and said count vector, using said record identifiers.

6. Method according to claim 5, wherein said sequence vector contains only integer numbers.

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7. Method according to any of the preceding claims, wherein calculation of said entry point information is based on a first block element (FBE) index and/or a last block element (LBE) index.

8. Method according to any of the preceding claims, wherein mapping a first dimension of said at least one dimension of real data records onto at least a second dimension of said at least one dimension of real data records.

9. Method according to any of claims 5 to 8, wherein said reference table is generated based on a real facts table which, at first, is extended by continuous index values providing a continuous numbering of the real facts.

10. Method according to any of claims 5 to 9, wherein said sequence vector consists of two columns, a left column containing said continuous integer numbers and the right column containing said index values in an ordered arrangement that enables to sequentially build-up said arbitrary matrix presentation.

11. Method according to any of the preceding claims, wherein performing only integer-based vector calculations for generating said arbitrary matrix presentation.

12. Method according to any of claims 9 to 11, wherein performing a pre-sorting step, which provides a first block-wise sorting of the real facts being used for the later sorting steps, wherein the sorting is calculated step-by-step per key dimension of the pivot presentation within these blocks in order to reveal the arbitrary sorting order.

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13. Method according to any of claims 9 to 12, wherein an index value resulting from said sorting steps is used in a sort position pointer table in order to determine a value for a target index in a resulting permutation table, by which the value of a current real facts value can be identified.

14. Method according to claim 13, wherein said resulting permutation table represents a targeted matrix sequence in a concerning sorting sequence.

15. A data processing program for execution in a data processing system comprising software code portions for performing a method according to any of claims 1 to 14 when said program is run on said computer.

16. A computer program product stored on a computer usable medium, comprising computer readable program means for causing a computer to perform a method according to any of claims 1 to 14 when said program is run on said computer.

17. An online analytical processing (OLAP) system for analyzing real facts data contained in a database by way of arbitrary n-dimensional matrix presentations of at least part of said database, wherein said database comprises at least one dimension of data records, each data record comprising at least one data key and a corresponding data value field, said OLAP system being characterized by the method according to claim 1.